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Final Task Report

MODIS Characterization Support Team Computer Hardware Facilities Analysis

Reporting Date: January 27, 1995
Contract No.: NAS5-32588
Task Manager: Paul Clemens
GSFC TO: Dr. Bruce Guenther
GSFC ATR: Dr. Malcolm Niedner
Performance Period: March 1, 1994 - November 30, 1994

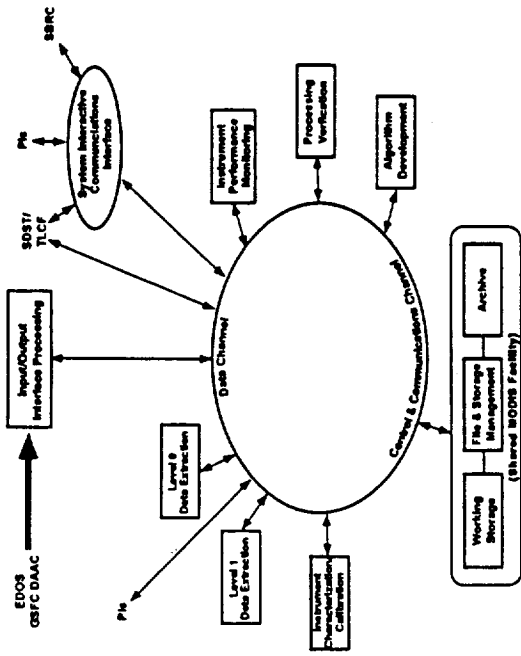
Task Description:

Identification and documentation of MODIS Calibration Support Team compute systems requirements. Proposal of promising alternative computer system architectures that could potentially meet MCST requirements in the near-term. Evaluation of proposed alternatives against the requirements defined. Recommendation of a single best alternative for implementation by the MCST.

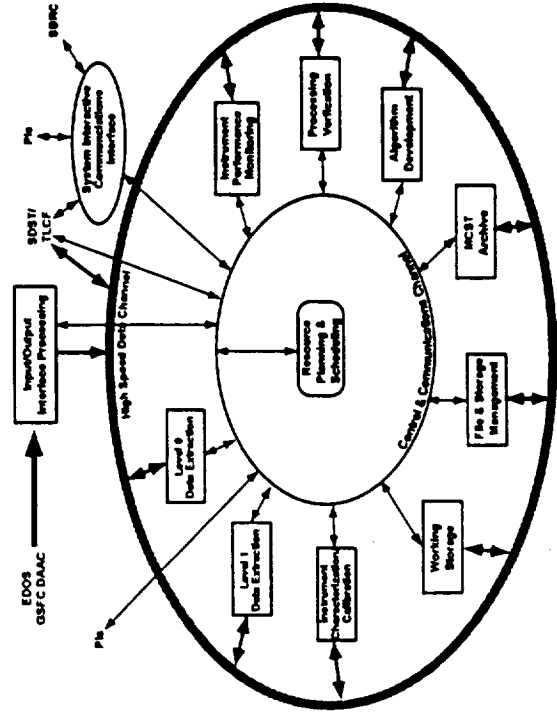
Major Accomplishments:

1. Attended weekly MODIS Algorithm Team meetings as part of effort to identify and document functional requirements for the MCST computing facility.
2. Attended meetings and presentations related to the development of the MODIS Calibration Plan as part of effort to identify and document functional requirements for the MCST computing facility.
3. Conducted interviews with MCST and SDST team leaders and members to discuss functions to be performed in support of MCST and to discuss issues related to MCST system functions, performance, software development, and sizing..
4. Developed a comprehensive list of MCST support functions, performed an analysis of MCST data flows, and developed a hierarchical set of MCST data flow diagrams.
5. Delineated a calibration life-cycle concept and characterized the MCST workload.
6. Performed analyses of MCST resource requirements, identifying current MCST resources and determining process characteristics and computing support requirements.
7. Analyzed candidate architectures and developed an architectural concept for the computational resources comprising the MCST system. The architecture proposed is to be implemented in phases as funding permits, performance requires, or as new options are presented by advances in technology. The attached figure illustrates the phased upgrade path starting with an initial implementation of the MCST computing facility and ending with a full-up architecture capable of meeting all requirements.
8. Identified, characterized, and sized internal processes to complete an analysis of required computing resource capabilities.
9. Proposed and costed computer system acquisitions for the recommended initial system to be put in place.

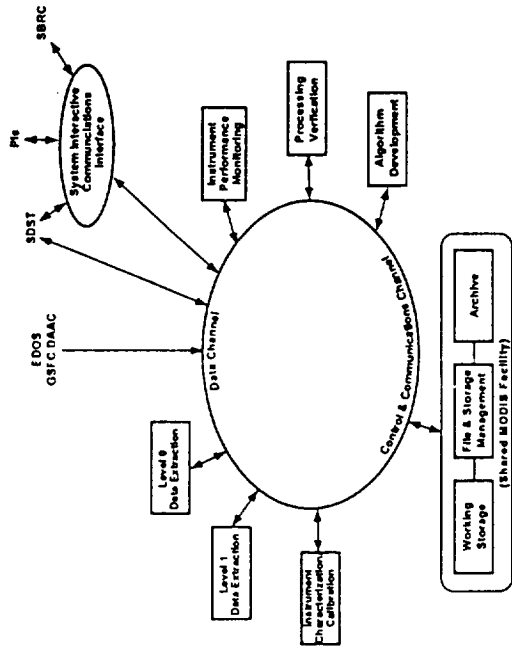
10. Completed and delivered a report documenting the results of the study to date, e.g.: requirements for MODIS calibration activities were defined, an MCST system architecture was proposed, and computing resources were identified and costed to meet near-term requirements.
11. Analyzed requirements for an MCST test bed capability and performed preliminary design work to establish such a capability.
12. Responded to a request from John Barker to provide architectural recommendations relevant to his project to analyze long term stability of Landsat sensors.
13. Provided recommendations to John Barker concerning tape and disk capacities, and a strategy to obtain high performance CPU upgrades to support Landsat processing was proposed.
14. Visited to Networld/Interop in Atlanta to collect information concerning FDDI hardware and software and to discuss FDDI issues with manufacturer representatives and developed a summary presentation concerning FDDI technology, features, and performance for use within the MCST.
15. Performed MCST software studies related to the portability of Sun-developed software to SGI machines and the effective use of SGI machines for software development.
16. Interacted with John Barker, Joann Harnden, Steve Ungar, and others, to update our findings to reflect emerging MCST requirements.
17. Prepared final presentation materials to summarize the results of the second phase of the MCST computing facilities analysis. Subjects included: allocation of functions to machines, a networking analysis update, and a test bed concept/design update.
18. Presented progress briefings to B. Guenther throughout the task.
19. Presented final study results to the MCST.



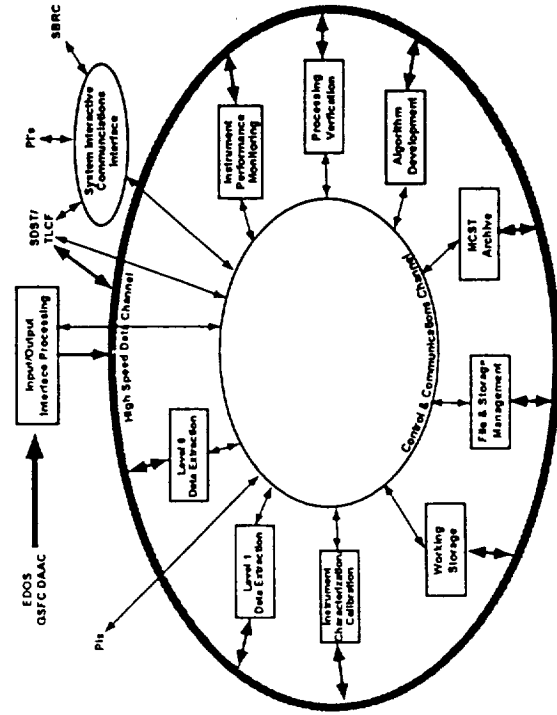
Phase 2



Phase 4



Phase 1



Phase 3